

CLAIMS

What is claimed is:

1. A semiconductor processing assembly, comprising:
a reaction chamber configured to house at least one semiconductor substrate;
a heater located at least partially within said reaction chamber;
at least one temperature sensor configured to sense a temperature and transmit a signal in response to a sensed temperature; and
a temperature regulator in communication with said heater and said at least one temperature sensor and configured to vary a thermal output of said heater responsive to said signal.
2. The semiconductor processing assembly of claim 1, comprising a plurality of temperature sensors for sensing temperatures at a corresponding plurality of locations.
3. The semiconductor processing assembly of claim 1, wherein the at least one temperature sensor is configured to sense a temperature within said reaction chamber.
4. The semiconductor processing assembly of claim 1, wherein said at least one temperature sensor is configured to sense a temperature of at least an area of the at least one semiconductor substrate.
5. The semiconductor processing assembly of claim 1, wherein said temperature regulator is configured to vary said thermal output of said heater over a span of time.
6. The semiconductor processing assembly of claim 1, wherein said reaction chamber comprises at least one of a hot wall furnace and a cold wall furnace.
7. The semiconductor processing assembly of claim 1, wherein said reaction chamber comprises at least one of a vertical furnace and a horizontal furnace.

8. The semiconductor processing assembly of claim 1, wherein said reaction chamber is configured to house only a single semiconductor substrate at a time.

9. The semiconductor processing assembly of claim 1, wherein said reaction chamber comprises a plasma enhanced chamber.

10. The semiconductor processing assembly of claim 1, wherein said reaction chamber comprises at least one of a high-pressure chamber, a low-pressure chamber, and an atmospheric-pressure chamber.

11. The semiconductor processing assembly of claim 1, wherein said reaction chamber comprises at least one of a furnace and a rapid thermal processing chamber.

12. The semiconductor processing assembly of claim 1, further comprising a rotator within said reaction chamber.

13. The semiconductor processing assembly of claim 12, wherein said rotator is configured to rotate the at least one semiconductor substrate.

14. A supplement to a fabrication chamber configured to perform a deposition process on a substrate, the supplement comprising:

a variable substrate temperature generation system configured to operate in cooperation with initiation of the deposition process, said variable substrate temperature generation system comprising a feedback control system in communication with at least one temperature sensor and a heating element of the fabrication chamber, said feedback control system configured to cause said heating element of the fabrication chamber to alter a thermal output within the fabrication chamber in response to transmission of a signal from said at least one temperature sensor.

15. The supplement of claim 14, wherein said feedback control system is configured to receive said signal and to alter power provided to said heating element in response to said signal.

16. An apparatus for use with a chamber that includes a heating element and is configured to perform a semiconductor fabrication process, the apparatus comprising:
a temperature control system configured to communicate with the heating element and to cause uneven heat distribution across a surface of a substrate positioned within the chamber during a time coincident with at least a portion of said semiconductor fabrication process.

17. The apparatus of claim 16, wherein said temperature control system is configured to cause uneven heat distribution during a time coincident with substantially an entire time span of the semiconductor fabrication process.

18. The apparatus of claim 16, wherein said temperature control system communicates with at least one temperature sensor configured to transmit a temperature signal in response to a sensed temperature, said temperature control system configured to cause said uneven heat distribution based on said temperature signal.

19. The apparatus of claim 18, wherein said temperature control system communicates with a plurality of temperature sensors and is configured to cause said uneven heat distribution based on temperature signals from said plurality of temperature sensors.

20. The apparatus of claim 18, wherein said temperature control system communicates with at least one temperature sensor configured to sense a temperature within the chamber.

21. The apparatus of claim 18, wherein said temperature control system communicates with at least one temperature sensor configured to sense a temperature of at least one area of at least one semiconductor substrate within the chamber.